Business Modelling Agility:
Turning ideas into business

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Abstract

Business Model Innovation is attracting more and more attention from business as well as from academics. Business Model Innovation deals with both technological and knowledge related changes that either may disrupt or sustain existing product/market strategies. Timing of Business Model Innovation both with regard to the right moment as well as speed of implementing competitive concepts becomes crucial. In this conceptual paper we discuss and evaluate possibilities for shortening the lead-time and increasing impact of Business Model Innovation aiming at low-end and new market disruptions. We are building our discussion on recent findings and identifying anomalies for further research by reflecting on exemplary business design cases.

Keywords: Business Model, Business Model Innovation, Business modelling, Business Scrum, Agility, Disruptive Business Models, Radical Innovation

1   Introduction

Business Model Innovation (BMI) is a topic that becomes more and more central in strategic analyses of companies (Bouwman et al., 2012). Whereas strategy is concerned with the long-term positioning of a company, business model (BM) is more related to describing the business logic or operational model of a company. BMs are lately acknowledged as instruments for strategy execution (Casadesus-Masanell and Ricart, 2010; Teece, 2010; Cortemiglia et al., 2015). BMs are used in designing and analysing how new innovative concepts can enhance competiveness of companies or

business networks. These new concepts can, for instance be based on new technological inventions, extending usage of existing technologies, or making a shift from a product to a service oriented logic. In all above situations timing and shortening the time to implementation of BMI is crucial to capture value, and re-organize it activities with respect to competition.

In this paper we focus on Knowledge intensive services (KIS). The motivation for this focus is that KIS is one of the growth sectors in most economies. In Europe KIS include high-tech services (e.g. R&D, and ICT), market services (e.g., transport, property management, equipment rentals), financial services (e.g., intermediation, insurance), education, health and recreation, both cultural and physical. Besides their growth potential KIS serve other economic activity by leveraging the innovative capacity and efficiency of industries. KIS are also expected to benefit from ICT, i.e. its disruptive power replaces old practices and creates, entry points to, new markets. Examples of such KIS are born global companies, whose *modus operandi* have proofed to be extremely efficient at unforeseeable scale. Think for example companies in the gaming industry, or in social media, where rapid product development combined with agile business modelling has brought supernormal profits with millions of customers and high valuations to SMEs (e.g., Supercell acquisition by Softbank and GungHo, Skype acquisition by Microsoft, WhatsApp acquisition by Facebook). These companies differ from others due to their right timing and short time-to-market, and meticulous real-time analysis of the success of the products on the market.

The objective of this paper is to conceptually analyse the ways to reduce time to market for KIS by focusing on agile Business Modelling and proposing a research direction. Bouwman et al. (2014) argue that BM design needs to start in early phases of ideation of new products and services. In this paper we take this argumentation a step further by arguing that BMI should follow the principles of agile software development, focusing on fast iterations. We build our argumentation on recent understanding of the innovation activity in the market, and apply them to KIS with an agile business modelling point of view. In our perception the industry of KIS is in need of faster methods for developing new services. We follow the idea of product innovation business literature such as Christensen & Raynor (2003), and apply the similar thinking in the design of business. Essentially, Christensen & Raynor (2003) propose three tactics: start early, start fast, and bring in the benefits early. Unfortunately, existing methods like Quality Function Deployment, Service Blueprinting and New Service Development become easily cumbersome and heavy weight endeavours of mapping existing practices instead of implementing innovations.

As implied by e.g. Teece (2010), more lightweight methods are needed to ramp-up and grow the operations quickly. In this article we propose an agile BMI method that interacts closely with the demand. In order to achieve our objective, we first build on the basic concepts of Christensen's Theory of Disruption (2006, 1997; Christensen & Raynor, 2003) and related recent research (e.g. Markides, 2006; Dan & Chieh, 2008; Wohlfeil & Terzidis, 2014). Then we pay attention to the objectives of BMI in the light of disruption and use the lessons learnt on speeding up business model design for Knowledge Intensive Services, an emerging approach of *Agile Business Modelling.*

2   Research Background

As the business environment has grown interconnected and co-opetitive (Brandenburger & Nalebuff, 1997) - i.e. forming networks of companies on contractual agreements, organizational arrangements like joint ventures (Hung & Chang, 2012), or loosely coupled trust based eco-systems - there is a need to show how results are related to business relationships in innovation activities (Christensen & Raynor, 2003; Dan & Chieh, 2008; Ritala & Hurmelinna-Laukkanen, 2009; Dedehayir et al., 2014) and harness new technology use in a systematic manner (Gnyawali and Park, 2011; Kunz & Warren, 2011; Heikkilä et al., 2015). It has been found, that obvious characteristics of companies such as size, complexity, technology intensity cannot be used as predictors

for successful disruption, because the effort in and success of innovation at company level is very contingent to the market, competitor (e.g., Hung & Chang, 2012) and regulatory situation, as well as resource mobilization (Sinha & Noble, 2005; Chiaroni et al., 2011). The need for further research is summarized by Ritala and Sainio (2014): *"Thus, the conceptual and empirical evidence is still inconsistent in terms of how coopetition affects the emergence of radical innovations."*

2.1 Disruptive Innovation Strategies

Many leading companies are spending big to maintain their competitive position to create better products for their customers (like for instance Nokia did in recent history) (Christensen, 2006). The dilemma of this *sustaining strategy* is, that an incumbent aiming at bringing better, or converging products onto established markets primarily will easily develop too complicated products whose extra performance is not valued by the average customers (Norman, 1998, depicted in figure 1. below). Incumbents end up in this fallacy, because the improvements serve their present customer base, demanding ever more improved, rich and expensive set of features. Hence, the company becomes vulnerable to *product/market disruptions*.
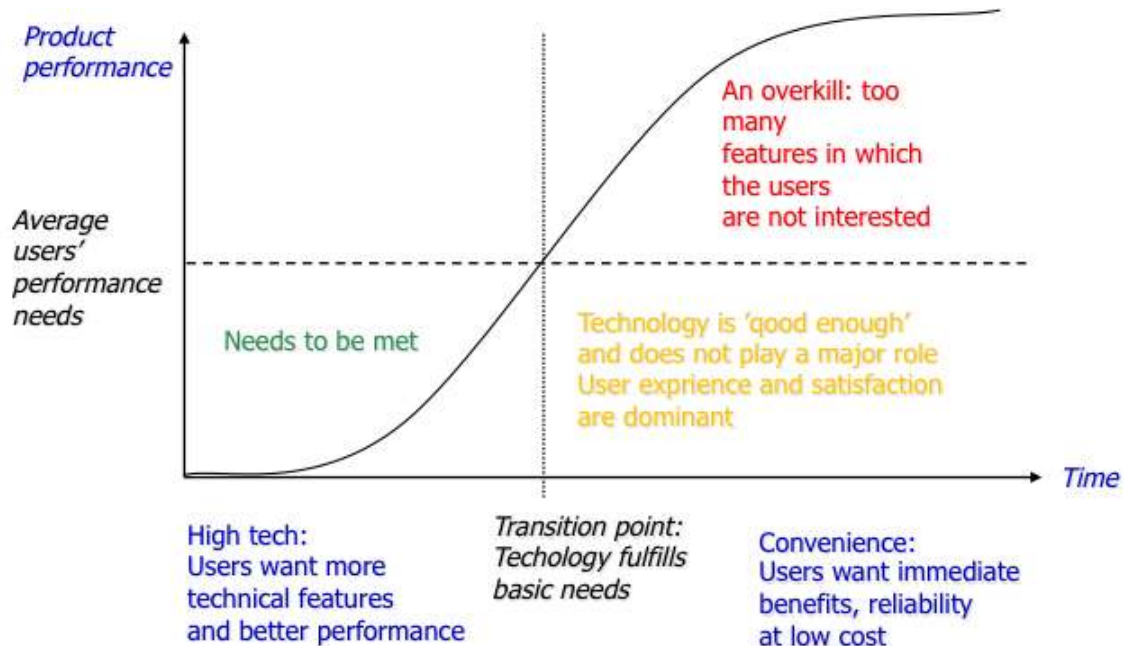

Figure 1. The Transition point in Technology Development

Another complication with sustaining strategy is in growth of complexity, especially in infrastructural products, which refers to product innovations serving a wide range of industries with backward compatible products, like for example banks, energy and mobility providers, or telecom industries. They are constantly developing new services, while complying with regulations and specialized code-of-conduct as advocated by authorities; or consumers sticking to an old technology (manual bank accounts, un-adjustable energy contracts, out-dated cell-phones, etc.). This increases the incumbents' production and transaction costs and creates complexity hard to tackle both in maintaining and innovating products, or operations in the context of KISs. On the other hand, these complications serve also as an obstacle for entrants to the market, especially if supported with significant need for investments in organizing structure, processes and capabilities (e.g. mixed and conglomerate organizations for talent development and transfer, Galbraith, 2014).

So, newcomers need BMs which outperform incumbents on the market with a novel, sometimes initially not even superior, solution providing in the long run substantial performance (price, quality) improvements over the products, sweeping eventually through all market segments (Figure 2). Typically this calls for more efficient business models to serve larger customer segment better, or at lower cost, disrupting the incumbents business.
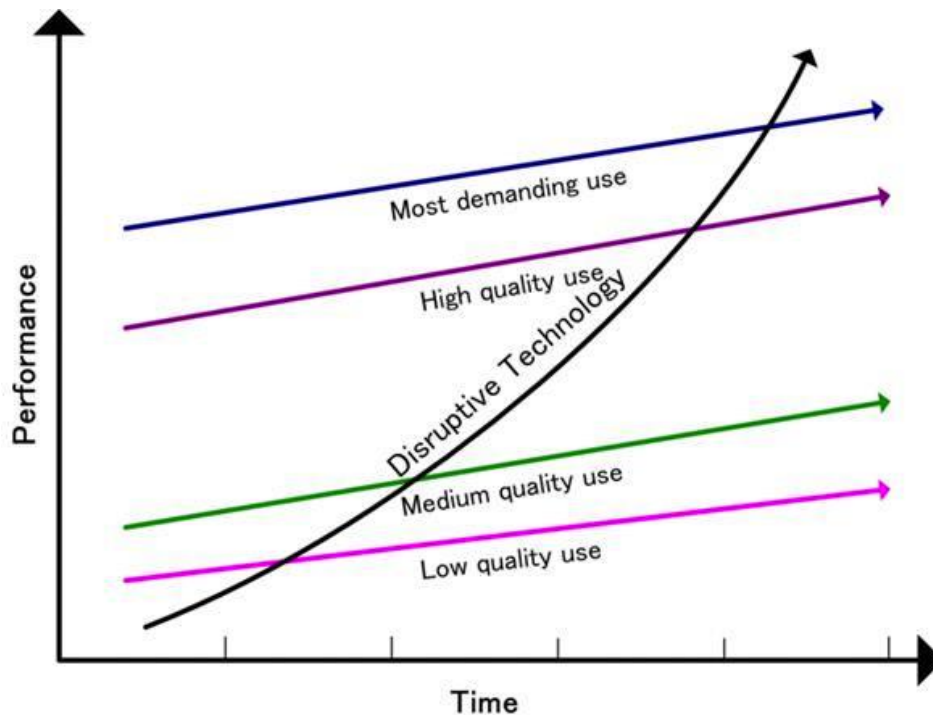

Figure 2. Disruptive Technology takes over market segments over time (c.f. Wikipedia, adapted and generalized from Christensen & Raynor 2003).

Such disruptions can be divided typically in two categories (Figure 3.): *"Low-End Disruption"* means that some customers are served better by providing simple choice for unbundled service at more affordable price (e.g., RyanAir vs. British Airways). The entrant's dilemma is that it is a constant up-hill battle taking time and ample resources to win new markets (illustrated in Fig 2.). The other type of disruption, *"New-Market Disruption"*, takes place when it becomes possible to serve customers, who were not previously served by existing incumbents (Fig 3.). Break-through on an uncovered market is a dream come true for every innovator, getting onto the 'blue ocean' instead of severe competition on the 'red ocean' (Kim and Mauborgne, 2005). But this blue ocean approach calls for special skills, the appropriation of which incumbents according to Doz & Kosonen are incapable: *"Beyond scale-up, and the fit of the business model and activity system to the strategy they currently pursue, [incumbent] executives seldom take the time, or perhaps do not have the skills, to reflect on new ecosystems and industry structures, or new business models and activity systems' architectures. … Being the designer or architect of a new system calls for very different skills from being the successful operator – or even builder – of an already designed business system."* (Doz & Kosonen, 2008, p. 27). This kind of disruption is claimed to be boosted often by open networked innovative activities (Christensen et al., 2009), where the incumbents seem to be at their weakest. In essence, the New-Market Disruption is about design, thinking out of the box, relating it to the external environment, and managing the implementation fast.
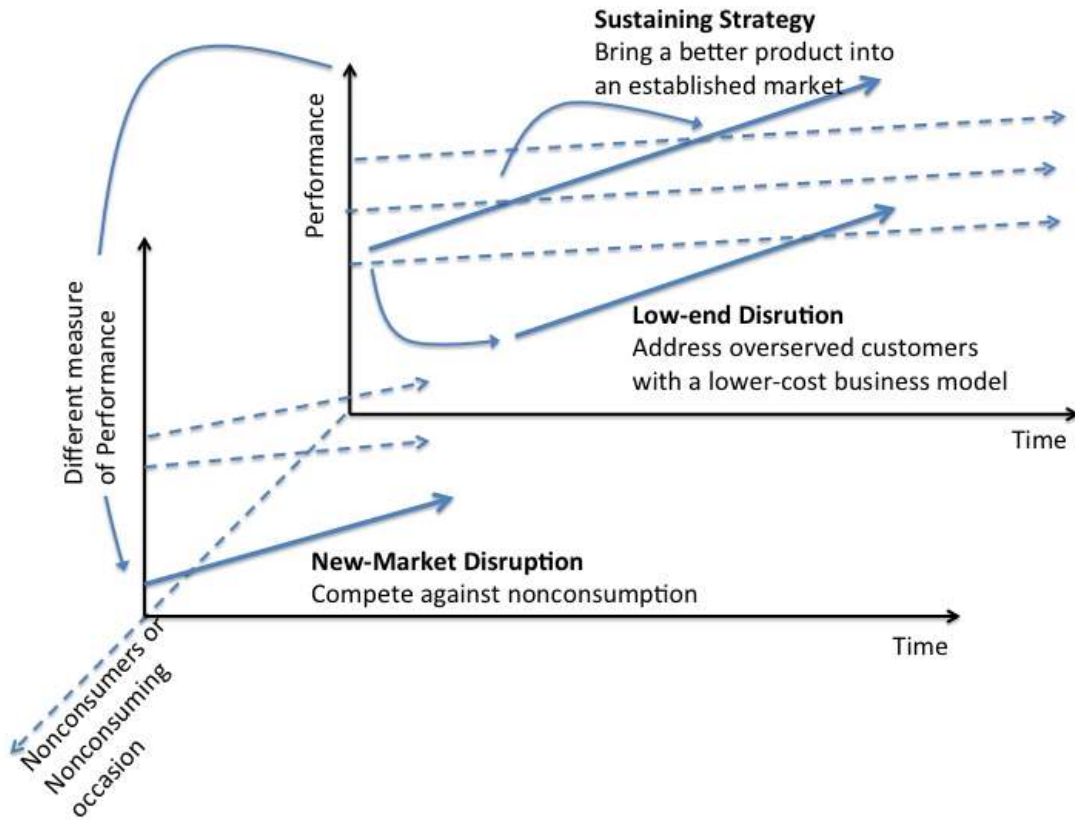
Figure 3. Strategies under different circumstances (Christensen & Raynor, 2003)
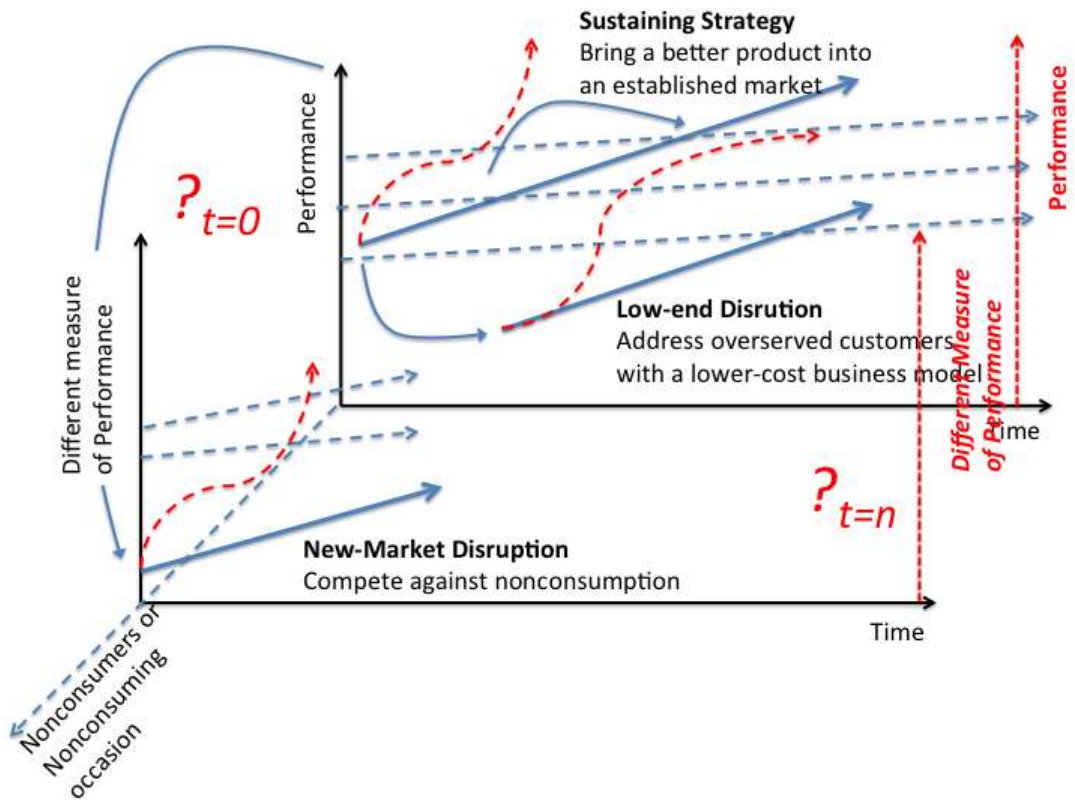

Figure 4: Tentative Benefits of Business Modelling in Service Innovation (the authors' adaptation of Christensen & Raynor, 2003).

For the purposes of our inquiry, the most interesting areas for studying business modelling and its effects on agile innovations are denoted with dotted arrows in Figure 4. With the help of business modelling, we should reach the higher market segments (the top most arrow) faster. An example of this evolution is Apple's success with their high-end market design and user experience. The other option is to find the minimal viable solutions for the market faster, or for a specific market segment (arrow starting from Low-end Disruption). Here we can use Android as an example overtaking ruling Symbian market in the first decade of 2nd Millennium. And finally, Apple can be seen to simultaneously redefining the mobile device market segment with their limited family of devices with high emphasis on connectivity and ease of use (New-Market Disruption).

2.2 Service Innovation and Business Modelling: the current state of the art

This paper focuses on *how time-to-market can be shortened for KIS by agile business modelling.* Our view is that of the entrant attempting to generate profit on the market, with the help of business modelling. The other side of the coin, generic strategies of incumbents against disruption are out of our focus, but is discussed in Wessel & Christensen (2012).

Service design literature is characterized by formal methods like stage gate models (Cooper, 2000), Quality Function Deployment QFD (Cohen, 1995; Chan &Wu, 2002), service blueprinting (Shostack, 1984), service concept analysis (Goldstein et al., 2002) and New Service Design (Menor et al., 2002). Bullinger, Fähnrich & Meiren (2003) as well as Karni & Kaner (2007) are proposing an engineering approach to service innovation. In a service engineering service components, specifically those based in software, can be re-used. All these methods can be used to help product-oriented companies to switch to a more service oriented approach. All the service innovation models and approaches have their own merits. They are characterized by a kind of phasing model, a number of steps to take, and, or formal analyses to be executed. Although valuable in themselves, most approaches are cumbersome and time consuming to implement in practice, and in practice they often lack the strategic connection to the market entry strategies of Low-End or New-Market Disruption.

Also the Business Model literature, either from a strategic management or marketing perspective (Zott & Amit, 2010; Osterwalder & Pigneur, 2010) or from an Information Systems perspective (Heikkila et al., 2010; Bouwman et al, 2008; El Sawy & Perreira, 2012), are following rather laborious and cumbersome steps or are specific towards value creation, or implementing business logic with IT. The activity system perspective (Zott & Amin, 2010) is rather holistic, high-level, and does not provide practical implementation guidelines. CANVAS as developed by Osterwalder & Pigneur (2010) is in our view a brainstorming tool, mainly focused on marketing of new products and services. The unit of analysis is a specific business and the business marketing and customer value creation process. These services can fit *a sustainable*, *a low-end or a market disruptive strategy*, but seldom is such a strategic orientation included in CANVAS-based BMs. CSOFT (Heikkilä et al., 2010) and STOF (Bouwman et al, 2008) share some communalities but also some differences. CSOFT is more focussed on product-customer segments, and derives quantifiable objectives explicitly from the strategies of a business – the innovativeness is essentially subject to strategic goals. STOF is more focussed on technological architectures and platforms, in combination with value networks and eco-systems that bring about a specific service or product. In STOF the service or product is the unit of analysis, which provides a basis for objectives setting, road mapping and stress-testing of the practical implementation of tentative services on the market (De Reuver et al., 2013). Both methods support the three *sustainable*, *low-end or market disruptive* strategies. However, in practice the focus is often on disruptive technologies as far as the work with STOF is concerned. VISOR (El

Sawy & Pereira, 2012), in turn, is a relatively new BM method, and its applications are still scant and mainly from incumbents. VISOR focuses on changes in Digital Businesses and therefore also on platforms and interfaces. The main applications, to our knowledge, are in the mobile application domain.

2.3   Agile development and BM

Agile approaches - such as XP (Beck and Andres 2005), Scrum (Schwaber and Beedle 2002), DSDM (Stapleton 1997) and FDD (Coad et al. 1999) - have been introduced in the context of software development as an alternative to the traditional, plan driven and heavy documentation focused methods (Lee & Xia, 2010). Agile development views the software development process to be dynamic, evolving, and organic, instead of predefined, mechanistic and static (Lee & Xia, 2010). It welcomes changing requirements and aims at satisfying customer needs by iterative development cycles (e.g. sprints) and co-design with customers and users.

Agile methods align development effort with business values by making business people and developers working together. The business view is expected to come from the product owner representing the customer. This has been found rather demanding role for individual persons and for instance Ktata and Lévesque (2009) suggest that to improve the approach there should be a steering committee which would help to identify the right product and requirements and govern the project toward business value maximization. In order to succeed the steering committee "*should share and maintain a common artifact that provides enough visibility on business expectations and sources of value during the evolution of a project*".

In line with Ktata and Lévesque (2009) we see the benefit from combining the business view with agile development methods. The common artifact could be BM - visualised with ontologies and tools - that are found to be useful boundary object between the stakeholders, customers and developers (Bouwman et al, 2012; Heikkilä, 2010). This extension to the development process - which we call as business scrum - would provide methods and tools for the team to work on business modelling issues either in a pre-BM phase or in cycles during the technical development of the product.

2.4   Summary of the background

Although the BM frameworks have a focus on exploiting technological opportunities, follow a service engineering or logic approach, or relate business logic to systematic change with enterprise architectures, it seems that practical, fast, and flexible methods are in short supply. In this paper we aim to study and create an agile way of developing BMs that would help in understanding product/service development position, and in achieving satisfactory business performance faster. In all the three situations, e.g. Sustaining Strategy, Low-End Disruption and New-Market Disruption, the main question is, whether we can show that business modelling helps us to reach our initial *(?t=0, as-is)* and targeted positions *(?t=n, to-be)*. Especially, if we can innovate with agile BM methods to reach them faster without sacrificing profits, by showing improved economic performance. Finally, both the achievement of objectives and economic performance requires a flexible set of metrics (right hand dashed performance indicators in Fig 4).

Building on the above reasoning we suggest the following development of tooling and targeted research for KIS to

- speed up the business innovation significantly to enter market quickly and implement novel business conducts (Christensen & Raynor, 2003; Markides, 2006).
- select suitable business modelling techniques that can describe the necessary changes from present way of operating business to BMI. For instance, incumbents tend to start from their existing resource base (e.g, Cortemiglia et al., 2015) and entrants, in turn, are facing the problem with market vs.

technology orientation in innovating their services (Govindarajan & Kopalle, 2006).
- set objectives for the change and economic performance to improve the BM capabilities (Heikkilä et al., 2014).
- identify feed-forward and feedback metrics to monitor implementation of sustaining or disrupting strategies (Heikkilä et al., 2014).

The above elements set up our model that can be used to analyse and design the existing business model and to identify the strategic position of specific empirical cases. This can be depicted coarsely as follows:

Ideation -> Method for formalizing the business idea -> Identifying the extent of change, or gap -> Feeding forward BMI objectives -> changing and feeding back the strategic position with operational and economic performance.

3   Beta-testing the analysis of BMI agility

We chose four European SMEs providing KIS to 'beta-test' our idea and discuss the reasoning. The selection of cases (Table 1) was motivated by both theoretical and pragmatic considerations so that they represent differing industries and have differing approaches to BMI, and the researchers had access to the case data. We applied design case approach (Sein et al., 2011; Van Aken and Romme, 2009) focusing on developing new business models.

	Case 1:	Case 2:	Case 3:	Case 4:
	Big data analytics platform service	PA prescription & measurement service	Mobile operator service	Wind turbine diagnosis service
Industry	Information Technology	Health & Wellbeing	Telecom	Energy
Company size	SME	SME	SME	SME
Maturity	Growth	Start-up	Mature	Mature
Location Market	Netherlands National B-to-B	Finland National B-to-B, B-to-C	Finland Local B-to-B, B-to-C	Denmark International B-to-B

Table 1: Case organisations

Case 1 is *developing service platform that would make big data analytics more accessible for Small and Medium sized Enterprises (SMEs)*. It is a knowledge intensive service aiming at new market disruption, opening a new business branch for the company. The case focused on utilising technological advancements in cloud computing, mainly virtualization and reduced cost of storage. After initial development rounds, SMEs were found to experience different kind of needs: varying access and collaboration mechanisms that required major design revisions and change of goals for the development. Only after piloting could the developers renew the technical architecture to achieve specified goals and requirements, which called for using STOF BM-ontology (Bouwman et al, 2008). Two iterations were made starting from value proposition for the SMEs, while the other customer segment was analysed in less detail. A marketing strategy was defined in order to achieve critical mass for the platform, but in practice lead customers were targeted to generate cash flow for further development. Because the case was technology driven the major development was focused on fast download speed, open source infrastructure technologies, development of APIs for data providers, as well as device agnostic applications, etc. with extra attention to security and management of users' profiles. Furthermore, the

business ecosystem was described in detail including value-, and information flows and actual operational processes in the latter stages of development, where after costs were estimated, risks assessed, a pricing strategy defined, and the revenue model, a mixed model combining a commission, a one time dataset download fee and a licence fee for longitudinal data, was developed. The BM was then evaluated by project team and external experts and customers using criteria such as completeness, consistency, viability, scalability and sustainability. The conclusion was that the business model was not yet complete and viable, and the project was discontinued. We can depict the development in Figure 5 as example 1, where technology dominates the design and BMI starts late.

Case 2 of *Physical Activity Prescription and measurement service,* is a reincarnation of a well-known, proved idea with new technology and business model, and has characteristics of *both Low-End Disruption* and *New-Market Disruption*. Ideation was started years earlier by an entrepreneur willing to expand from pharmacy consulting towards novel platform based data fusion and analysis services for b-to-b customers in occupational health. The idea was developed into initial business model CANVAS in a project with a network of business partners, some of whom were incumbents having good contacts to potential customers. With the help of an IT solution provider the entrepreneur defined the information systems requirements for information exchange between the parties. The project group piloted the service with real customers. Based on a set of business model metrics (Heikkilä et al., 2014) the pilot indicated that one business model would not fit all customer segments, and introducing varying customer segments complicated the technical requirements. Furthermore, one of the incumbents questioned the benefits from committing to risky and complex network of partners. After three years of the business modelling design kick-off, the service innovation development was suspended for the time being by the incumbent. In Fig 5. the case can be illustrated with the market opportunity in the beginning that after tentative BM is aiming at joint technological solutions, but the complications of the technology and unsolved BM problems halt the BMI.

Case 3, a company of 300 employees providing mobile and Internet access and services was willing to redefine the incumbent dominated, oligopolistic market by *introducing mass-customized services for their existing and potential clients*. It is a *low-end disruption strategy* providing better, more agile and affordable service with the leap of new technology. The work started with a consultant's recommendation of building a specific information technology solution as add-on to existing operating model. The management realised that there were inherent discrepancies of the suggested technical solution with various client segments' needs and desired objectives of winning new markets. Business modelling discussion started to clarify the design into a level of service technology design and building on automated common infrastructure and service components to all customer segments, distinct from customer segment specific processes. CSOFT was used for innovating the BM. The case changed quickly in the beginning from technology dominant design to parallel technology and business model development, and finally into iterative, alternating design of technology and business model. It also appeared that the metrics of guiding the process and design outcome were *different for the business model and technology development* in order to maintain the integrity of strategic objectives. The business model has been implemented for three years now, and the company has been expanding according to its strategic objectives in a profitable manner, taking advantage of the separate realms, and performance measures of technology development and business model implementation with mergers and acquisitions (Fig 5, example 3).
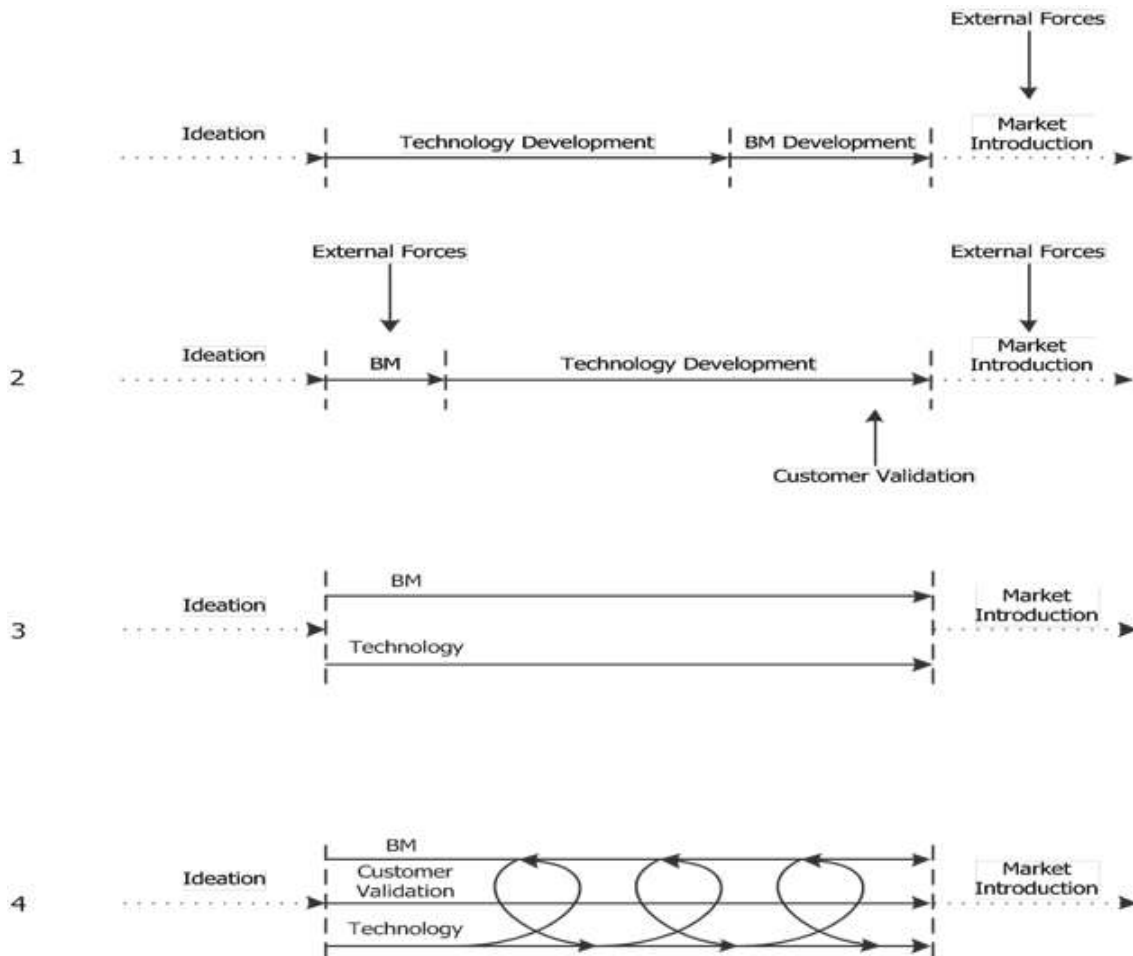
Figure 5   Proposed BMI processes

Case 4 concerns a SME company in the wind energy industry. The case is an example of *servitization*. The company intended to exploit patented prototype add-on technology to increase wind turbine efficiency by reducing turbine misalignment with dominant wind flow based on Low-End Market -disruption. One-off sales BM was to replaced, or at least tried with an alternative mass-customized service-oriented BM, starting with competing technologies and stakeholders analysis. The requirements analysis followed in two-layers: requirements for the BM design as well for the service offering. Interviews with lead-users from different customer groups within the value chain were executed to get insights in the service offering, as well as interviews & design workshop within the company were conducted to get an understanding of the requirements for the BM design, and the availability of companies' resources and capabilities. The results were continuously confronted for attestation on usability and on the BM. As a consequence present one-off sales got replaced with a two-step approach: First offering a cheap software based wind turbine diagnosis service, based on which the company will be able to estimate potential efficiency loss. At second stage an add-on hardware device can correct the misalignment and its cost to the customer is charged based on performance improvement. This two stage BMI appeared universally attractive to all newer customer segments, where the diagnostic can be done with software. The technological know-how and production capabilities reside in-house to provide both hardware as well as complementary software in a bundle, but the iterative critical reviews and analyses of the product in parallel with BM development did really lead to an alternative BMI without keen competition. Case

4 followed the last process, example 4, depicted in Fig 5, that is the business modelling, technology development and customer validation were carried out in cyclical manner.

4 Lessons Learnt and Further Research

Our study is a tentative probe into BM and BMI, illustrated with four select design cases. We intend to use the results for developing more lightweight, BM method for Knowledge Intensive Services entrants' fast implementation of BMI for different strategic situations and grounding the development of the method on sound research.

The better understanding of the strategic intent is crucial to concentrate resources in improving existing products for existing customer base with Sustaining Strategy, or to introduce disruptive technological solutions with BMI on Low-End Disruption and New-Market Disruption. Against this backdrop, we claim that innovation calls for the utilization of new technology and novel business models simultaneously. Simultaneously means in this context that they are considered in together, preferably in the market context, because the business model can then act as a boundary object between the stakeholders, customers and developers (Heikkilä, 2010; Heikkilä & Heikkilä, 2013). It also can act as an intermediator of the external market forces (reception and competition) similarly as agile product development probes the alternative solutions and user experiences. Balanced view on both is necessary in quick BMI realization - emphasising too much of the other seem to have negative, and different, problematic consequences on the speed of the implementation of the BMI.

The cases are divers, but nevertheless they indicate the need for rapid iteration. Iteration can be implemented by dividing innovation in parallel product development and Business Modelling streams and by maintaining integrity between the two by rapid review cycles, or by balancing the performance measures between product development and BM according to the strategic intent. This helps to maintain customer focus and meet the market requirements early enough. The postulated need for iteration is well in line with some recent findings in KIS: *"a SaaS client's agility to leverage external resources, reconfigure its internal resources for strategic move and service provision, and mitigate the effect of environmental turbulence plays a critical role in competitive performance."* (Chou et al., 2014). In other words, in response to the turbulent market and technological environment an organization must be constantly and quickly scanning and responding to the changes by reconfiguration of internal and external resources and activities.

In this paper we illustrated our ideas with four illustrative design cases. Further research on agility in BMI is clearly needed. Our intention is to confirm the findings with a larger data set collected from various entrants in the forthcoming years.

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